

Potential Sources

The section outlines potential human related sources of sediment pollutants.

- Roads
 - sediment production from the road surface
 - sediment delivery to the stream network
 - sediment delivery from damaged, failed, or undersized culverts
 - sediment production due to road prism failure
- In stream conditions
 - Increased stream transport and erosive power from reduction of in stream structures and channel simplification
 - Increased stream transport and erosive power from increased overland runoff (see human caused vegetation removal)
- Human caused vegetation removal
 - Increased susceptibility of riparian bank failure and bank erosion
 - Increased stream transport and erosive power from reduced input of large wood (see in stream conditions)
 - Increased overland sediment production and transport (in area with vegetation removal)
 - Increased stream transport and erosive power from increased overland flow (in area with vegetation removal)
 - Gully erosion
 - Sheet and rill erosion
 - Increased landslide susceptibility

Source Analysis

General

1. Compare reference site indicators to non reference site indicators.
2. Develop Turbidity / Total suspended solids / flow relationship

Roads - During TMDL Development

1. Development of conditions-based metrics in order to identify a high sediment risk road locations (HSRR). Using these criteria, some potential sources could be mapped using a GIS, LiDAR data and/or other local knowledge. The conditions-based metrics and map will be the starting point for identifying high priority road network locations.
2. Identify additional assessment needs to be conducted during TMDL implementation.

During TMDL Implementation

1. Identification and reporting of identified high sediment risk road locations currently or at significant risk of delivering sediment to waters of the State.
2. Continued monitoring and refinement of reported improvements to water quality benchmarks.

Landslides

1. Develop a GIS database of existing landslides identifying landslide type, time period of movement, slope, failure depth, and other attributes using the protocol from Burns and Madin (2009).
2. Identify deep seated or translational slides using LiDAR and methods described in Roering et al (2005).
3. Identify locations susceptible to shallow landslides using a factor of safety approach (Hanberg 2004, Hanberg 2009) and/or a geomorphic modeling approach (Shaw and Johnson 1995).
4. Identify site specific approaches and protocols to assess landslide susceptibility during TMDL implementation

(During TMDL Implementation)

1. Identification/verification of landslide susceptibility at the site specific scale.

Vegetation Removal

1. Map stream locations with low or no riparian vegetation using LiDAR and/or Landsat derived canopy data (Huang et al 2001).

In stream Conditions

1. Characterize the intrinsic large wood recruitment potential for different streams using Netmap (Benda et al 2007).
2. Compare the existing in stream wood volume (where data exists) to reference range.

Allocations

1. Calculate percent reductions for each biocriteria-impaired geographic area based on the difference between the current fine sediment index and benchmark fine sediment index.
2. Calculate percent reduction and/or TSS concentration that would not exceed drinking water benchmark.

Surrogate Measures

1. Develop management strategies (BMPs) for forest roads, agricultural roads, and public (county, state, municipal) roads.
2. Develop management strategies (BMPs) to minimize landslide susceptibility from human activities.
3. Develop management strategies (BMPs) to restore and proper structure and function to riparian areas and protect existing riparian vegetation (Note: the Temperature TWG is also advising on this area of synthesis & coordination).
4. Develop management strategies to maintain or restore natural reference range of in-stream structure to minimize excessive stream transport and erosive power.